PB90-178179

Superfund Record of Decision (EPA Region 2): Pepe Field, Boonton Morris County, New Jersey (First Remedial Action), September 1989

(U.S.) Environmental Protection Agency, Washington, DC

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EPA

Superfund Record of Decision:

Pepe Field, NJ

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Pepe Field site is a former disposal area in the town of Boonton, Morris County, New Jersey. The 3-acre site is an inactive, municipally owned recreational facility in a predominantly residential area. From 1935 to 1950 the E.F. Drew Company used the site to dispose of wastes generated from processing vegetable oils and soap products. Materials reportedly deposited onsite by the E.F. Drew Company were diatomaceous earth and activated carbon filter residue; incinerator and boiler ash; boiler ash; lime sludge; and soap residue. Residents living adjacent to the site complained about objectionable odors originating from the site. To reduce odor emissions, the town implemented elements of the odor abatement program proposed by the Drew Company. During the 1960s the town covered the site with soil and installed a leachate collection and treatment system. Although these measures reduced the the odor problems, some incidents were still reported. Investigations revealed gas concentrations exceeding the lower explosive limit in the soil vapor at the perimeter of the site and in an apparent soil gas plume extending below the property adjacent to the site. The primary contaminants of concern affecting the soil found in the landfill include hydrogen sulfide and methane gases. (Continued on next page)

17. Document Analysis a. Descriptors

Record of Decision - Pepe Field, NJ
First Remedial Action - Final
Contaminated Medium: soil
Key Contaminants: hydrogen sulfide gas, methane gas

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 51
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(See ANSI-Z39.18) See Instructions on Reverse OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

EPA/ROD/R02-89/091
Pepe Field, NJ

16. Abstract (Continued)

The selected remedial action for this site includes maintaining the site cover; installing and maintaining a landfill gas collection and treatment system using carbon adsorption; disposing of carbon offsite; upgrading and maintaining the existing leachate collection and treatment system; ground water monitoring; and implementing deed restrictions to prevent waste disruption. The estimated present worth cost for this remedial action is $1,293,700, which includes an estimated O&M cost of $108,000 for the first two years and $93,000 for the next 28 years.

DECLARATION STATEMENT

RECORD OF DECISION

Pepe Field

SITE NAME AND LOCATION

Pepe Field
Boonton, Morris County, New Jersey

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Pepe Field site, chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and, to the extent applicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision document explains the factual and legal basis for selecting the remedy for this site.

The State of New Jersey concurs with the selected remedy. The information supporting this remedial action decision is contained in the administrative record for the site.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response actions selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedy presented in this document represents all planned activities for the site. Prior actions by the Town of Boonton included the installation of a landfill cover, surface water controls, and a leachate collection and treatment system. The selected remedy, together with these prior actions, will properly close the site and satisfy State of New Jersey requirements for such facilities.

The major components of the selected remedy include the following:

- installation and maintenance of a landfill gas collection and treatment system;
- upgrading and maintenance of the leachate collection and treatment system;
- maintenance of the site cover;

- implementation of a ground water monitoring program; and

- establishment of deed restrictions to prevent waste disruption.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable for this site. However, because treatment of the principal threats of the site was not found to be practicable or justified, this remedy does not satisfy the statutory preference for treatment as a principal element.

Because this remedy will result in potentially hazardous substances remaining on the site above health-based levels, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

William J. Muszynski, P.E.
Acting Regional Administrator

9-29-89
Date

DECISION SUMMARY

PEPE FIELD

Boonton, New Jersey

SITE DESCRIPTION

The Pepe Field site is located in the Town of Boonton, Morris County, New Jersey (Figure 1). The Town of Boonton is an urbanized area with a 1980 census population of 8,620. Boonton Township is located less than one-half mile north of Pepe Field; this rural township had a population of 3,273 in 1980. The site is situated west of County Route 511 (Boonton Avenue), and is bordered by Wootton Street and Hillside Avenue. It covers an area of approximately three acres. The site is situated in a residential area and is currently an inactive recreational facility owned by the Town of Boonton. The facility includes tennis courts, a baseball field, a playground and a refreshment stand (Figure 2).

The Pepe Field site is a former disposal site which was used for the disposal of wastes generated from the processing of vegetable oils and soap products. The cover fill at the disposal site is typically a mixture of brown, fine to medium sand intermixed with a fine granular ash material with small amounts of slag. The thickness of the cover fill ranges from two to seven feet with an average thickness of approximately three feet.

A treatment system is operated by the Town of Boonton to reduce odors. A 14-foot deep gravel curtain drain extends along the southwestern end of the site for 150 feet. The drain intercepts shallow ground water and leachate from the site and diverts it to a sump in a pumphouse located at the eastern end of Hillside Avenue. A solution of fifty percent hydrogen peroxide is injected into the sump pump discharge manhole. This treated effluent is then discharged intermittently to the storm sewer on Hillside Avenue.

The site topography is gently sloping to the south-southwest, with a relief of approximately 15 feet. Presently, no surface water exists on-site. As explained above, treated leachate is discharged from the leachate pumphouse to a storm sewer. Surface site drainage is also discharged into the storm sewer system. The storm sewers drain into the Rockaway River about 3,000 feet from Pepe Field.

There are no potable wells in the immediate area or hydraulically downgradient of the site. The Rockaway River, which receives both storm water runoff and ground water discharge from the area, is used as a drinking water supply by Jersey City, New Jersey.

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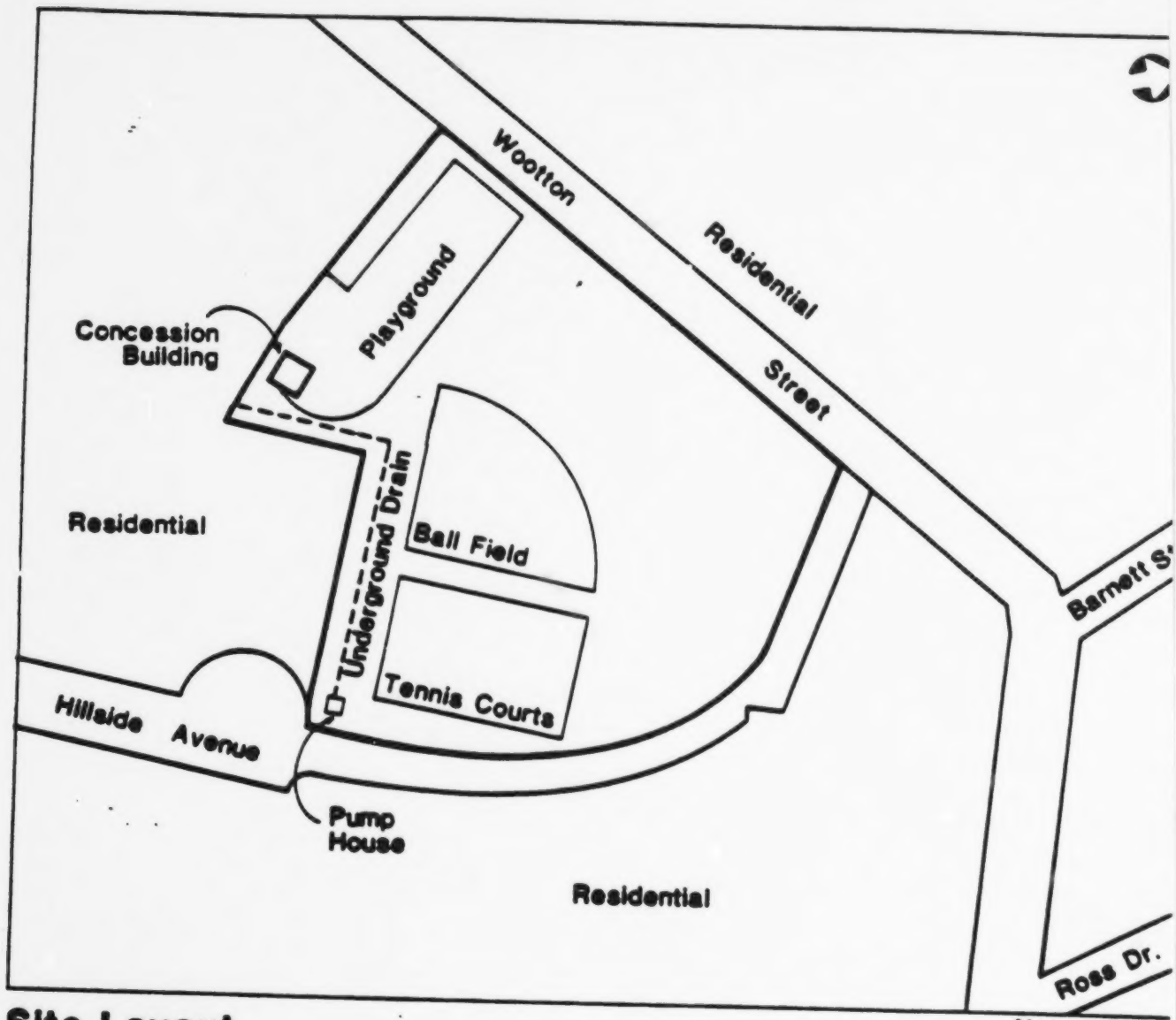

Site Layout
Pepe Field

Boonton Town, NJ

Source: Rogers, Golden & Halpern, 1983

FIGURE 2

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Until the early 1930s, the area known as Pepe Field was a marsh containing several small streams which discharged to a nearby lake. The site was bounded to the north by Wootton Avenue which was essentially at its current elevation. At that time, the site was owned by the Gustav Bentley family of Boonton; many early records of the site refer to it as Bentley's Field. Beginning around 1935, and continuing until about 1950, the E.F. Drew Company (Drew Company) used the area for the disposal of wastes from its plant in Boonton, New Jersey. These wastes were generated in the course of processing edible vegetable oils and soap products. During the time that the site was used for waste disposal, Mr. Bentley was an employee of the Drew Company. According to an affidavit provided by Daniel Padavano, an employee of the Drew Company from 1929 to 1964, the only materials deposited on the site by Drew were diatomaceous earth and activated carbon filter residue from edible oil processing and purification; incinerator ash from the burning of wood and paper; boiler ash; lime sludge from the treatment of wastewater from oil processing; salt residue from glycerin processing; and soap residue from the manufacture of cleansing and soap products for household and industrial use. Although Mr. Padavano acknowledged that nickel catalysts were used at the plant, he denied that those materials were disposed of at Pepe Field.

Mr. Padavano was responsible for transporting wastes to Pepe Field and used his personal vehicles for waste transport. Waste material was reported to have been deposited several times a week and covered with a sand and gravel mixture obtained from a gravel operation located in Montville, New Jersey. The quantity of wastes which the Drew Company disposed of at the site is not known.

In 1947, the Boonton Board of Health requested that the Drew Company cease waste disposal at the site by June 30, 1947. The Boonton Board of Health also requested that the waste be covered in 1948. This was not done and the site remained an open, unused area until the mid-1960s.

During the time that the Drew Company used the site for waste disposal, complaints were registered by residents living adjacent to Pepe Field about objectionable odors originating from the site. In 1949, the Town of Boonton responded to the complaints and conducted sampling of the wastes at Pepe Field to determine the source of the odor. Hydrogen sulfide was detected in liquid waste samples. In March 1951, the Drew Company proposed an odor abatement program which included placement of a cover over the site, construction of a leachate collection trench around the exposed portion of the waste, and construction of a concrete pit for chemical treatment of the leachate. Although this proposal was reviewed and approved by a consulting firm retained by the Town of Boonton, the Drew Company did not implement the plan.

In 1965, the Town of Boonton retained Industrial Hygiene Services to conduct air sampling and to evaluate potential health hazards due to hydrogen sulfide generated by the site. Detectable levels of hydrogen sulfide (1 part per million (ppm)) and mercaptans (4 ppm) were found only beneath a grate in the drainage system for the site. The levels found did not, in the opinion of Industrial Hygiene Services, pose any health hazard.

During the 1960s, the Town of Boonton implemented the elements of the odor abatement program proposed, but not carried out, by the Drew Company. In the early 1960s, the site was covered with up to 10 feet of soil in preparation for use for athletic activities. In 1969, the present leachate collection and treatment system was installed. These measures reduced the frequency and severity of odor problems, however, some incidents were still reported.

In 1965, the Town of Boonton began negotiations with Mr. Bentley for the purchase of the site for use as a recreational facility. The site had been used on an informal basis by local children for many years. In 1970, the Town concluded the purchase of the property and began developing it for more formal use, including Little League baseball. The site remained in use until 1984, at which time the Town of Boonton closed the facility in anticipation of the beginning of the remedial investigation to be conducted in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). A four-foot high chain link fence, installed by the Town, currently surrounds the field.

In May 1979, samples were taken of the leachate and from the storm sewer by the New Jersey Department of Environmental Protection (NJDEP). Results showed that the concentrations of organic compounds were below detection levels and that concentrations of metals were low. In November 1981, NJDEP resampled the leachate. This time, compounds detected included alpha-BHC (23.2 parts per billion (ppb)), bis(2-ethylhexyl) phthalate (37.7 ppb), and trace metals. Based on these results, Pepe Field was proposed for inclusion on the National Priorities List (NPL).

A Cooperative Agreement between the NJDEP and the United States Environmental Protection Agency (EPA) to perform a remedial investigation and feasibility study (RI/FS) was finalized in October 1984 and the RI/FS was initiated in the fall of 1985.

In 1983, NJDEP ordered the Drew Company to install ground water monitoring wells around the site in accordance with the New Jersey Pollutant Discharge Elimination System (NJPDES) program. This was held in abeyance pending the outcome of the RI/FS. The Town of Boonton has instituted court action against the Drew Company for recovery of past and future costs associated with the wastes at the

site and is awaiting the findings of the RI/FS. EPA is currently evaluating enforcement actions that can be taken consistent with the findings of the RI/FS and the implementation of the selected remedy embodied in this Record of Decision (ROD).

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The RI/FS report and the Proposed Plan for the Pepe Field site were released to the public for comment on August 15, 1989. These two documents were made available to the public as part of the administrative record and at an information repository maintained at the EPA Docket Room in Region II. They were also made available at the Boonton-Holmes Library and at the Boonton Town Municipal Building. The notice of availability for these two documents appeared in the Daily Record and Star Ledger. A public comment period on the documents and the proposed remedy was held from August 15, 1989 to September 22, 1989. In addition, a public meeting was held on September 6, 1989. At this meeting, representatives from NJDEP and its consultant, EA Engineering, Science, and Technology, Inc., answered questions about problems at the site and the remedial alternatives under consideration. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this ROD.

SCOPE OF THE RESPONSE ACTION

This Record of Decision addresses all planned activities for the site. It documents the selected approaches for preventing direct contact with site wastes, for preventing migration of landfill gases, for collecting and treating leachate, and for monitoring ground water quality. The selected remedy augments the measures already taken by the Town of Boonton in covering the site and building a partial leachate collection system. There is currently no ground water problem associated with this site, nor is one expected in the future; however, ground water monitoring will ensure that this evaluation is correct.

SUMMARY OF SITE CHARACTERISTICS

A Phase I remedial investigation was performed from 1985 to 1986, to determine the nature and extent of contamination at, and emanating from, the Pepe Field site and to evaluate its significance. This was accomplished through the following techniques:

- Geophysical Surveys, including electromagnetic terrain conductivity profiling, resistivity sounding, and a magnetometer survey.

- Test Borings to determine the waste distribution and hydrogeologic profile, and to obtain samples to chemically characterize soil and fill materials at the site.

- Monitoring Well Installation and Sampling to assess ground water quality and the potential for off-site migration.

- Surface Water Sampling to chemically characterize leachate and to determine the impact of the storm water outfall from the site on the Rockaway River.

- Air and Soil Vapor Sampling to better define the potential for air transport of contaminants and to further characterize air contaminants.

The geophysical surveys were conducted primarily to guide the placement of test borings and ground water monitoring wells. The areas of apparent anomalies coincided closely with available information about the locations used for waste disposal. These were the areas where the test borings and the on-site monitoring wells were located. The remaining areas of investigation are described below.

In general, the results of sampling the various media showed several parameters above local background concentrations, but at levels which were below established limits or values which would be expected to cause health effects. Because the reliability of the analytical results were considered to be critical in making judgments about the site, a Phase II remedial investigation was initiated in February 1988. The results of both phases are discussed together on a media-specific basis. More extensive and detailed information can be found in the Phase I and Phase II remedial investigation reports.

Test Borings

The subsurface materials encountered during the test boring program are divided into cover fill, waste material, or underlying soil. The cover fill at the disposal site is typically a mixture of brown, fine to medium sand, intermixed with a fine, granular ash material with small amounts of slag. The thickness of the cover fill ranges from two to seven feet, with an average thickness of three feet.

The waste material appears as a black-to-dark-gray oily ash substance with a tar-like consistency. Small white nodules of diatomaceous earth are randomly interspersed in the black matrix. Unsaturated samples of waste resemble oily fly ash and exhibit a moderate hydrogen sulfide odor. Saturated samples are viscous and tarry, and exude a strong hydrogen sulfide odor. The thickness of the waste material ranges up to thirteen feet. The areal extent of the waste material has been assessed by geophysical methods, soil vapor analysis, and test borings. These efforts indicate that ash fill may extend beyond the southern and western boundaries of the site, however, significant quantities of oil-containing waste emitting hydrogen sulfide and methane do not appear to be present off-site.

Test borings encountered a marsh deposit beneath the waste material. The buried marsh deposits extend beyond the southern and western boundaries of the site and may also be a source of methane. The marsh sediment is underlain by dark green, stiff silt and dense, silty, very fine sand with infrequent lensoidal clay and sand. The presence of this silt is estimated not to be extensive beyond the site boundaries.

Samples from test borings were identified as either cover fill, waste material, or underlying soil. Chemical analytes found in concentrations above background levels were: cover fill -- organic acids, volatile organic compounds, alcohols, ketones, polynuclear aromatic hydrocarbons, phthalate esters, pesticides, metals, and sulfur compounds; waste materials -- organic acids, volatile organic compounds, alcohols, aldehydes, phthalate esters, styrene, metals, and sulfur compounds; and underlying soil -- organic acids, volatile organic compounds, ketones, phthalate esters, metals, and sulfur compounds.

Although the analytes listed above were present in concentrations above background levels, they were not at levels high enough to produce health effects, except in the waste itself. There were some samples which were composites of both cover fill and waste that contained metals at levels which, if representative of the surface soils, would be of concern. Therefore, surficial soil samples (0 to 6 inches in depth) were taken at fourteen locations as part of the Phase II work. These samples were analyzed for metals. The results were within the range of background concentration levels.

Monitoring Well Installation and Sampling

Installation of ground water monitoring wells, both on-site and off-site, served to establish the local geology and hydrogeology as well as provide ground water samples for evaluation. The site is located on an apparent outwash lens approximately 30 feet thick. The hill situated north of the site is a manifestation of an abrupt lateral change in lithology from a moderately sorted, stratified outwash sand and gravel deposit to a dense, very poorly sorted, unstratified till composed of silt, sand, gravel, and boulders. The outwash deposit is underlain by till which intersects the surface near the northeast corner of the site and comprises the hill north of the site. There may be a bedrock core to the hill but its depth is not known.

There are hydrogeologic differences between the outwash and till aquifers. The monitoring wells which are screened in the outwash sand exhibit a higher potentiometric level than those screened in the lower till aquifer. Pump test data, however, indicate they are at least partly connected.

Ground water conditions at the site which are important considerations for remediation are:

- The shallow silt layer is, at least locally, not saturated.
- The shallow silt serves as a local semi-confining layer, and water perches within the waste and within the fill south of the site.
- The silt significantly retards vertical ground water migration.
- Ground water quality directly beneath the site does not appear to be significantly impacted by the leachate.
- The gravel curtain installed along the southern perimeter of the site intercepts the major portion of leachate flow.
- Ground water in the shallow sand aquifer appears to underflow the gravel curtain.
- Recharge of the shallow sand aquifer is by leakage through the upper silt layer from the perched water table and by underflow from the till deposit to the north.
- The lower till is recharged from the till upgradient and from leakage through the lower silt layer.

Samples of ground water obtained from downgradient wells during the Phase I investigation were found to have elevated concentrations of metals and organic acids in comparison to the upgradient well. Results of analysis of samples of ground water during Phase II were similar for metals; however, organic acids were not detected. The concentrations of metals were below drinking water standards.

Surface Water Sampling

During both the Phase I and Phase II investigations, samples were taken of treated and untreated leachate, and storm sewer water, at downgradient and background locations. In addition, during the Phase I work, samples were taken from the Rockaway River at locations upstream and downstream from the outfall from Pepe Field.

During the Phase I investigation, both treated and untreated leachate samples were found to have elevated levels of metals, volatile organic compounds, phthalate esters, pesticides, and sulfur compounds with respect to upgradient surface waters. Phase II surface water

sampling results were the same as for Phase I except that no pesticides were detected. The results of sampling of the Rockaway River showed no detectable difference between the upstream and downstream locations.

Air and Soil Vapor Sampling

Two sampling efforts were made to find high concentrations of hydrogen sulfide in the breathing zone air during the Phase I investigation. The first effort utilized sampling tubes with a detection limit of one ppm. The only samples which showed detectable levels were those taken inside the leachate pumphouse. Those samples showed levels as high as 15 ppm. In comparison, the Occupational Safety and Health Administration (OSHA) standard for an eight-hour exposure is 20 ppm.

During the second sampling effort, samples were analyzed with a portable gas chromatograph with a detection limit of two ppb. Of 80 samples taken in the breathing zone, only 14 showed detectable levels; for those samples, the results ranged from two to five ppb. The only locations showing higher concentrations were the leachate pumphouse, a crack in the tennis court pavement, and a crack in the retaining wall near the paved play area. At these locations, the concentrations were still below one ppm. After the second attempt at direct measurement of hydrogen sulfide levels which could produce health effects, it was decided to rely on calculated values based on soil vapor results.

In contrast, levels of hydrogen sulfide, thiols (mercaptans), and methane were easily and consistently detected in soil vapor samples obtained from the vadose zone. Samples containing more than 60 percent methane were obtained below the infield of the baseball field. Samples containing 50 to 60 percent methane were found at the fence line along Wootton Street. Hydrogen sulfide was found at similarly high levels under the infield (2,000 ppm), but the concentration dropped off rapidly toward the edges of the site and was found at only two to five ppm in samples of soil gas along the perimeter.

An important part of the Phase II work was the expanded soil gas investigation. The high methane concentrations in the soil beneath the ball field and inside the fence along Wootton Street were confirmed. Soil gas samples taken outside the fence, in the margin between the sidewalk and Wootton Street, were also found to have very high methane levels. Conversely, methane concentrations on the far side of Wootton Street were very low or non-detectable. Soil gas sampling along the western side of the site and at the southwestern corner disclosed one area where methane might be migrating away from the site. In the back yard of a residence on Pepe Way, two high readings were found about halfway between the site and the back of

the house. Due to soil conditions and a high water table, samples could not be obtained either near the site or near the house. Thus, the origin and extent of the off-site methane could not be determined.

In April 1988, a sampling team from NJDEP performed a soil gas survey for methane in the suspected plume area. High readings, in concentrations of greater than 100 percent of the lower explosive limit (LEL), were found extending from the site to a point about 18 feet from the house on Pepe Way. The concentrations then fell rapidly to non-detectable levels at a point ten feet from the house. The crawl spaces under the house were checked at the same time and no detectable levels of methane or hydrogen sulfide were found. The house on Pepe Way, and several houses along Wootton Street, were checked during May 1989. At that time, no detectable levels of methane or hydrogen sulfide were found in any of the dwellings.

Miscellaneous Sampling

In July 1988, a sampling team from NJDEP took test boring samples at Pepe Field. These samples were taken for the purpose of evaluating the likelihood that the waste would be classified as hazardous for disposal if a remedial action involving removal were undertaken. These samples were intended to be biased toward the worst case. Therefore, they were taken as close as possible to the areas from which the four waste samples with the highest metals concentrations were taken, as determined from the Phase I remedial investigation. The samples were then analyzed for the purpose of determining whether or not they would be defined as "characteristic" waste in accordance with the regulations of the Resource Conservation and Recovery Act (RCRA). With the exception of one sample, which exceeded the EP Toxicity criteria for lead by a narrow margin, all samples would not be classified as hazardous waste.

Contaminant Fate and Transport

No surface water body is directly impacted by the site. Treated and untreated leachate are discharged to the storm sewer system, which ultimately enters the Rockaway River. Samples of river water obtained above and below the point of discharge showed no appreciable difference in chemical quality. Based on the results of chemical analyses of samples of treated and untreated leachate, the remedial investigation concluded that dermal contact with leachate, and inhalation of volatile organic compounds volatilizing from the storm sewer system, are not matters of human health concern at Pepe Field.

Subsurface conditions at the site were explored to depths of up to 80 feet below grade. Bedrock was not encountered at these depths. The overburden beneath the fill at the site is made up of a shallow outwash sand aquifer, averaging 16 feet in thickness, underlain by a till aquifer. Both aquifers are under semi-confined conditions as a result of overlying silt deposits. A depositional "pinch-out" of the

outwash sand and the silt layers occurs immediately north of the site, north of which the till aquifer is unconfined. The direction of ground water flow in the outwash sand is to the south, while that in the till is to the southeast. The following dissolved analytes were found in downgradient ground water at levels above the background concentrations: octanoic acid (18 ppb), decanoic acid (28 ppb), dodecanoic acid (46 ppb), barium (57 ppb), calcium (63,400 ppb), iron (8,228 ppb), lead (3.7 ppb), magnesium (31,957 ppb), manganese (268 ppb), mercury (0.2 ppb), potassium (8,233 ppb), sodium (44,330 ppb), zinc (245 ppb), sulfate (86,000 ppb), and sulfide (500 ppb). Based on the results of chemical analyses of samples of ground water taken immediately upgradient and downgradient of the site, the remedial investigation concluded that dermal contact with, and ingestion of, ground water are not matters of human health concern at Pepe Field.

Two soil layers of concern were identified at Pepe Field, the waste material, which contained the greatest degree of contamination, and the cover fill. Only the surficial layer of the cover fill was of concern from a human health perspective based upon possible routes of exposure. The routes under consideration were contact with soil during athletic activities on the ballfield, soil ingestion by children on the site, and exposure via inhalation of fugitive dust emissions (wind erosion) from the site. Nickel and carbon disulfide were the identified contaminants of greatest concern for the first two routes of exposure, and nickel for the third. Air modeling was performed in order to estimate the air concentration of nickel resulting from wind erosion at the site.

The air investigation at Pepe Field consisted of a soil-vapor survey, and air sampling and analysis. The air investigation results indicate that hydrogen sulfide, methanethiol, and methane generated from biodegradation of the waste material accumulate in the vadose zone. Discharge to the atmosphere is locally inhibited by the presence of pavement on the site surface. However, cracks in the pavement result in identifiable point sources of emission. Natural venting in the unpaved areas may be enhanced by increased soil moisture or lower barometric pressure.

Atmospheric concentration levels resulting from point sources related to leachate (pumphouse, storm drain catch basins, and accesses to untreated leachate in the abandoned drainage pipe) may also increase after rainy periods as a result of increased leachate flow.

The accumulation of combustible gases generated at Pepe Field was identified as a potential hazard. Field investigations showed concentrations of combustible gas in excess of the lower explosive limit in the soil vapor at the perimeter of the site and in an apparent soil gas plume extending below an adjacent property.

SUMMARY OF SITE RISKS

Human Health Risks

A baseline risk assessment, that is, an assessment of the risk posed by the site if no action were taken, was performed in accordance with the provisions of the Superfund Public Health Evaluation Manual. This procedure consists of identifying contaminants of concern and their concentrations, and then using these values along with an evaluation of exposure pathways to estimate human intake of each contaminant. The estimated intake is used with a toxicity assessment factor to develop a characterization of the risk associated with the site. Toxicity assessment factors fall into two categories, cancer potency factors and reference doses.

Cancer potency factors (CPFs) have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. RfDs, which are expressed in units of mg/kg-day, are estimates of lifetime daily exposure levels for humans, including sensitive individuals, that is not likely to be without an appreciable risk of adverse health effects. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse noncarcinogenic effects to occur.

Excess lifetime cancer risks are determined by multiplying the intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g., $1x10^{-6}$ or $1E^{-6}$). An excess lifetime cancer risk of $1x10^{-6}$ indicates that, as a plausible upper bound, an individual has a one in one million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

A multi-technique hazard identification scheme was used to identify the analytes at Pepe Field that are above background concentrations and present the greatest potential risks. The contaminants identified for detailed evaluation were: hydrogen sulfide, ethanethiol, methanethiol, methane, nickel, bis(2-ethylhexyl) phthalate, and carbon disulfide.

Inhalation of hydrogen sulfide, and to a lesser extent, methanethiol and ethanethiol emitted by the soil vapor from Pepe Field was identified as potentially causing adverse health effects. Exposure to these compounds was modeled and potential levels of exposure were calculated. Although perceptible by smell, the concentrations are not sufficient to cause adverse health effects on a mean-case exposure basis. Estimates of exposure during high-emission scenarios were also modeled, and exposure estimates were still well below concentrations associated with adverse health effects. The worst-case scenarios modeled indicated that no adverse health effects would be expected if all of the hydrogen sulfide contained in the soil was emitted into the air within a 24-hour period. If all of the hydrogen sulfide in the soil were released within 15 minutes (most likely an impossible scenario), annoying health symptoms such as mild eye or throat irritations, nausea, or dizziness may be observed for a short period of time. Based on these calculations, no adverse health effects are expected to result from gaseous releases from the Pepe Field site.

The modeling exercises and field investigations did indicate, however, that sufficient gases are being released from the site to produce unpleasant odors. These odors may be the result of the thiol, as well as the hydrogen sulfide emissions since, although being emitted from the site at lower concentrations, the thiols have characteristically unpleasant odors which are detectable at concentrations significantly lower than hydrogen sulfide. These odors, while unpleasant, are not expected to cause adverse health effects. There may be significant negative social and economic implications associated with these unpleasant odors, however.

Exposure to carbon disulfide via ingestion and dermal contact was considered. Carbon disulfide exposure is related to a number of noncarcinogenic health effects, but these are not expected to occur because the lifetime average daily intake was estimated to be far below the acceptable daily intake (ADI). Exposures to bis (2-ethylhexyl) phthalate were not considered in the baseline risk assessment because only the deeper soils contain detectable quantities of this substance.

Exposure to nickel via inhalation of wind-borne soil erosion, ingestion, and dermal contact with surficial soil, was considered. The cumulative daily dose resulting from worst-case exposure assumptions was below the ADI, so noncarcinogenic effects are not expected to occur.

Nickel is carcinogenic only when inhaled, so the carcinogenic risk from eroded soils was calculated. The area of the baseball diamond was considered the area best available for erosion. The emission of nickel from this surface was estimated using a wind-blown dust equation. The on-site concentration of nickel in air was calculated using a "box-model". The on-site risk was estimated to be 6.2×10^{-7} and, therefore, was considered insignificant. The off-site air concentrations estimated based on generic applications of the Industrial Source Complex Long Term Model provided more realistic ambient air concentrations for off-site dispersion. The risks based on these model results ranged from 4.4×10^{-10} to 3.7×10^{-9} and, therefore, were also considered to be insignificant.

Environmental Risks

Pepe Field is in the middle of a residential neighborhood in an extensively developed area. It is not surprising, therefore, that no environmentally sensitive ecosystems with potential exposure to contaminants released from the site were identified. No critical habitats are affected by the site contaminants. No endangered species or habitats of endangered species are affected by the site contaminants. No detriment to environmental quality is expected.

Potential Future Risks

Although the risks presented by Pepe Field in [illegible] state are limited, there are several possible situations [illegible] develop which would increase the risk.

The accumulation of the methane generated at Pepe Field was identified as a potential threat to public welfare. Field investigations showed concentrations of combustible gas far in excess of the lower explosive limit (LEL) in the soil vapor at the perimeter of the site and in the soil vapor of at least one adjacent private property. The threat posed by combustible gas is not associated with its release to the atmosphere, but with its potential migration into the buildings on-site or nearby basements and accumulation to explosive levels. Since the methane gas concentration is high at the perimeter and off-site, however, construction on adjacent property or installation of a new sewer line under Wootton Street could open new pathways for gas migration.

A second possible development involves the progress of the anaerobic digestion of the waste at Pepe Field. At this time, the high levels of metals (nickel, lead, chromium) in the waste show no tendency to migrate into ground water at levels of concern. Two factors exist at this time which tend to limit leachability. First, the anaerobic process tends to keep the metals in a reduced state in which their solubility is relatively low. Second, the wastes which show the highest levels are those which are very oily in nature; the oil would tend to exclude water from the matrix, thereby reducing metal leaching. As the landfill continues to age, however, the oils will

be consumed by the anaerobic process and the chemical nature of the system will change. In that case the metals could become more leachable. The more likely case, considering the age of the material, is that as each successive layer of oil is consumed, the exposed metals will be leached gradually into the ground water without ever approaching levels which would affect human health or the environment. The worst case should be anticipated, however, and ground water monitoring should be continued with the results watched closely for new trends.

A third possibility for an increase in risk would occur if the landfill cover were not maintained. A significant elevation difference exists across the site, so that the cover could be eroded, especially if the paved areas started to deteriorate. If the waste were uncovered, and if the waste after weathering had the same susceptibility to wind erosion that the current cover has, and if one assumes the maximum concentration of nickel found in the waste (1,300 ppm), then the cancer risk due to inhalation could be as high as 4×10^{-5}. This represents a compounding of several "worst case" assumptions, but it does indicate the need for cover maintenance.

Summary

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF ALTERNATIVES

Based on the remedial investigation and risk assessment, the remedial objective for the Pepe Field site was determined to be landfill closure in accordance with New Jersey Solid Waste Regulations (N.J.A.C. 7:26-2A.9). The implementation closure would address the threat posed by landfill gases and their migration off-site. To this end, a large number of technologies were screened to determine their applicability to the site. The technologies found to be applicable at Pepe Field were grouped to form remedial alternatives. The alternatives identified were then evaluated based on the criteria of implementability, effectiveness, and cost. Two of the alternatives (Excavation with Off-site Incineration and Excavation with On-site Solidification/ Stabilization) were dropped as a result of this screening. The remaining alternatives, which are described below, were then subjected to a more detailed individual and comparative analysis. Appropriate costs for monitoring, and for maintenance of the cover and leachate system, have been added to those in the feasibility study. Cost and construction time estimates for each alternative are presented in Table 1.

Alternative 1: Excavation and Off-site Disposal

This alternative would involve the excavation and disposal of the waste material at an industrial waste landfill. The waste would be excavated, mixed with cement kiln dust to control free oil and water, and loaded into lined bulk trailers for transport. The waste quantity was estimated to be 16,000 cubic yards (34,000 tons). It is estimated that as many as 10 truck loads of waste could be removed from the site during each day of operation. With five days of operation each week, the excavation would be expected to require approximately 18 weeks. The cover fill would be stripped, stockpiled, and backfilled on a daily basis. Due to the limited size of the site, it would be necessary to backfill the pit as the excavation proceeded. The excavation would be conducted in compliance with New Jersey Solid Waste Regulations concerning landfill disruption.

It is anticipated that a small fraction of the waste might be classified as hazardous based on the EP Toxicity tests for metals. This material would require stabilization before disposal. This cost has not been estimated.

Dewatering of the site would be required to permit excavation of the waste. A low permeability silt layer underlies the waste and creates a perched water table which saturates a portion of the waste. Recharge to the water table is from horizontal flow through the site from the hillside north of the site, vertical flow from the outwash aquifer immediately below the silt layer, and precipitation. It is expected that recharge to the area of excavation could be significantly reduced by the installation of a row of wellpoints, installed to a depth of approximately 30 to 40 feet, along the upgradient perimeter of the site (along Wootton Street). Removal of approximately 170 gallons per minute from the wellpoint system should lower the water table to below the silt layer at the upgradient perimeter of the site and significantly reduce the piezometric head of the outwash aquifer over the entire site. This would eliminate the horizontal flow through the site and reduce considerably the upward movement of water through the silt layer. It is assumed that water removed by the upgradient wellpoint system could be discharged to a storm sewer or otherwise directed to surface drainage.

Removal of water from the excavation would still be required. This would be accomplished by the construction of sumps and pumping of water from the open excavation. Water saturating the waste and surrounding soil, and precipitation, would accumulate in the excavation at an estimated rate of approximately 4,000 gallons per day. Water removed from the excavation would require on-site treatment before discharge or removal from the site for off-site treatment. On-site treatment is expected to be most cost-effective. Treatment would be primarily for odor control (sulfide removal) using activated carbon adsorption. Because the water removed from the excavation would likely be high in suspended solids, prefiltration

would also be necessary. Prefiltration would significantly reduce the solids loading on the carbon filter. Because a caustic-impregnated carbon is necessary for effective removal of sulfides, used carbon cannot be regenerated and must be disposed of by landfilling. The cost estimate prepared for this alternative assumes disposal of the carbon in an industrial waste landfill. Carbon usage was estimated using the average concentrations of sulfur compounds detected in the raw leachate samples collected during the remedial investigation; the estimated carbon usage would be approximately 2,000 pounds per month during operation of the dewatering system.

Effluent from the treatment system would be discharged to a storm sewer or otherwise directed to surface drainage. It would be necessary to obtain an NJPDES permit before water could be discharged to surface waters.

No maintenance or monitoring would be required after completion of the removal.

Alternative 2: Passive Perimeter Controls

This alternative would involve the construction of a high permeability trench vent around the entire perimeter of the site. The outer wall of the trench would be lined with a low permeability polyvinyl chloride (PVC) liner to prevent gases from passing through the vent by diffusive flow. Geotextile fabric would be placed between the trench wall and the liner to protect the liner. It is assumed that approximately 1,450 linear feet of a three-foot wide trench would be excavated to a depth equal to or greater than the seasonal low water table. The geotextile fabric and liner would be placed, and the trench backfilled with gravel, to approximately three feet below the ground surface. Perforated PVC pipe would then be placed along the full length of the trench. Vent stacks approximately ten feet tall would also be installed along the trench. The trench would be backfilled to the ground surface with gravel. The perforated piping and vents would ensure that a pathway for gas flow to the atmosphere would remain open should the surface of the trench become blocked with snow and ice or vegetation. Drainage channels would be constructed along the trench as necessary to prevent surface water flow into the vent.

In order to accurately determine the depth to water and subsequent depth of the trench vent, it would be necessary to install approximately four shallow piezometers (less than 15 feet deep) screened in the perched water table at the site. Ideally, the piezometers would be installed in time to allow field measurement of the seasonal low water table although water table measurements taken during a period of the year not likely to represent the seasonal low could be used to estimate the seasonal low water table. For cost estimating purposes, it was estimated that the low water table in the area of the site would average approximately 10 feet below the ground surface.

Operation and maintenance requirements for the trench vent are expected to be minimal. Monitoring of off-site soil vapor would be required to ensure the effectiveness of the system. It was assumed that monitoring would consist of the collection and evaluation of soil vapor data every six months for two years following the implementation of the alternative and annually thereafter.

In addition to installation and maintenance of the trench vent, this alternative would also include maintenance of the site cover, operation and maintenance of the leachate collection and treatment system, and monitoring of ground water and leachate. Deed restrictions to prevent waste disruption would be sought.

Alternative 3: Active Interior Gas Venting With Cap

This alternative would involve capping the site, installing gas collection piping and vacuum blowers, and venting the gas through stacks to the atmosphere.

Pilot testing would be required before an active gas venting system could be designed. At Pepe Field, pilot testing would involve installation of test wells at areas of the site currently paved. Pressure test probes would also be installed at several distances from the test wells. Tests would then be run at several vacuum pressures. The pressure gradient created by each test well would be determined by measuring the vacuum pressure at the test probes. The radius of influence of the test well could then be determined for various vacuum pressures and the most cost-effective combination of blower size and collection system spacing determined. It may also be necessary to perform meteorological testing at the site to determine prevailing wind direction and velocity. This information could be used during site-specific dispersion modeling to determine the most effective stack height and location, and gas discharge velocity.

For cost estimating purposes, it was assumed that PVC gas collection piping would be placed in trenches backfilled with gravel. Pipe runs would be placed approximately every 50 feet over the entire site. Blowers would be installed and gas discharged through vent stacks. Unpaved portions of the site would also be capped.

Manholes would be provided for access to valves and gauges and for repair or maintenance of the collection system piping. Long-term operation and maintenance of the blowers and collection system, as well as routine soil vapor monitoring as described for Alternative 2, would be required as part of this alternative.

In addition, this alternative would also include operation and maintenance of the leachate collection and treatment system, and monitoring of ground water and leachate. Deed restrictions to prevent waste disruption would be sought.

Alternative 4: Active Interior Gas Collection and Treatment with Cap

Construction for this alternative would involve all of the elements of Alternative 3 except that the gases would be treated before being vented. Gas treatment would be required primarily for hydrogen sulfide removal and odor control. For this reason, carbon adsorption was selected as the most effective gas treatment method. Gas would be passed through activated carbon columns in series before being discharged through a stack. Because a caustic-impregnated carbon is required for hydrogen sulfide removal, carbon from this system could not be regenerated. Carbon which has reached capacity would be removed for off-site disposal at an industrial waste landfill. One carbon unit would be taken off-line for carbon change-over while another remained in service.

Carbon usage was estimated by calculating the quantity of hydrogen sulfide detected in the vadose zone during soil vapor sampling performed as part of the remedial investigation. It was assumed that this quantity would be withdrawn from the site each day. An average concentration of 280 ppm of hydrogen sulfide was detected in soil vapor at the site. With a maximum depth to ground water of ten feet, soil porosity of 0.3, and plume area of 2.5 acres, a total of approximately 9 pounds per day of hydrogen sulfide would be withdrawn from the site. An adsorption capacity of 20 percent was assumed for the carbon and a 20 percent factor was included to account for carbon consumption by other compounds present in the gases (e.g., thiols). This calculation resulted in a monthly carbon usage of approximately 1,600 pounds.

In addition to installation and maintenance of the cap and gas collection and treatment system, this alternative includes operation and maintenance of the leachate system and monitoring of ground water, leachate and off-site soil gas. Deed restrictions to prevent waste disruption would be sought.

TABLE 1

PEPE FIELD REMEDIAL ALTERNATIVES COST SUMMARY

Remedial Alternative	Cost--Present Worth Basis[1] ($Thousands)			Time[2] (Mos)
	Capital	O&M[3]	Total	
1. Excavation/Disposal	6,873	0	6,873	6
2. Passive Perimeter Controls	255	465	720	2
3. Interior Gas Venting	379	566	945	3
4. Interior Gas Venting/ Treatment with Cap	413	1,235	1,648	3
5. No Action/Monitoring	0	410	410	0

[1] Present worth of O & M with 10 percent discount rate.
[2] Construction time only--in months.
[3] Operation and Maintenance. Includes monitoring cost.

Alternative 5: No Action with Monitoring

This alternative would involve monitoring of the contaminant levels in ground water, leachate and off-site soil gas. In addition, deed restrictions to prevent waste disruption would be sought. Monitoring data would be reviewed on a periodic basis to determine whether additional measures were needed.

Maintenance of the cover and operation of the leachate treatment system would be consistent with NJPDES requirements.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

This section presents a comparative evaluation of the alternatives discussed in the preceding section. This is accomplished through an assessment of how each alternative relates to the others with respect to the nine criteria that EPA has developed to address the requirements of section 121 of the Superfund Amendments and Reauthorization Act of 1986 (SARA).

Overall Protection of Human Health and the Environment

Excavation and Off-site disposal, and Active Interior Gas Collection and Treatment with Cap (Alternatives 1 and 4) both fully achieve the remedial objectives and thus provide the greatest protection of public health and the environment. Both alternatives would mitigate combustible conditions at the site and eliminate air emissions. Active Interior Gas Venting would mitigate combustible conditions, but would include direct discharge of the vented gases to the atmosphere. This discharge would not present a risk to the public health or the environment, but would result in localized odors.

Passive Perimeter Controls would eliminate the primary safety concern at the site, the development of combustible conditions in off-site structures. This alternative would eliminate off-site migration of gases through the subsurface soil. Air emissions from the site would, however, continue at the current rate. As evaluated in the RI, these emissions do not present a risk to the public health or the environment, but result in odors. Under the No Action alternative, current conditions would persist and the potential for the development of combustible conditions in off-site structures would remain.

Compliance with ARARs

Alternatives 1, 2, 3, and 4 would meet applicable or relevant and appropriate requirements (ARARs) of Federal and State environmental laws.

Alternative 5 (No Action/Monitoring) would not meet the requirements of the New Jersey Solid Waste Regulations with respect to landfill closure (N.J.A.C. 7:26-2A.9). Therefore, Alternative 5 is not considered further in this analysis.

Long-Term Effectiveness and Permanence

Excavation and Off-site Disposal, and Active Interior Gas Collection and Treatment with Cap were considered to be most effective in the long term. Both alternatives would mitigate combustible conditions and eliminate air emissions at the site. Passive Perimeter Controls would relieve combustible conditions at the perimeter of the site, but would not address interior site conditions or air emissions. Active Interior Gas Venting would reduce combustible conditions at the site and control air emission. Vented gases would, however, be directly vented through an on-site stack.

Reduction of Toxicity, Mobility, or Volume through Treatment

The reduction of toxicity, mobility, or volume of waste material through treatment is not involved in the comparison of alternatives for this site. The potentially hazardous substances which remain on the site have not shown evidence of mobility during the time that they have been there. Therefore, waste treatment is considered unnecessary at this time and highly unlikely to become necessary in the future.

Alternatives 2, 3, and 4 include treatment of leachate. The purpose of this treatment, however, is to reduce odors, not toxicity.

Additionally, Alternative 4 includes treatment of collected landfill gases.

Short-Term Effectiveness

Excavation and Off-site Disposal (Alternative 1) would be the least effective alternative in the short term. Risks to the community, site workers, and the environment resulting from implementation of this alternative are expected to be greater than for the other alternatives considered, although not significant. Excavation and off-site disposal would also require the most time to implement. The short-term effectiveness of the three remaining alternatives (excluding No Action) are considered to be basically equivalent. The No Action alternative is not considered effective.

Implementability

Excluding No Action, Passive Perimeter Controls would be the most easily implemented alternative. Construction requires readily available materials and services and few technical or administrative setbacks are anticipated. For the active venting alternatives, pilot testing would be required during design and specialized personnel may be needed during startup.

Considerable difficulties could be expected during implementation of Excavation and Off-site Disposal. Design and operation and maintenance of two dewatering systems and a water treatment system would be necessary. An NJPDES permit would be required prior to discharge of the treated water to surface waters. Also, on-site mixing of the waste with cement kiln dust would most likely be necessary to minimize free oil and water.

Cost

All costs in this section are the combined construction, and operation and maintenance costs for the life of the remediation. All are stated on a present worth basis.

The alternative having the lowest cost is Alternative 2, Passive Perimeter Controls. The cost is $720,000.

The next least expensive is Alternative 3, Active Interior Gas Venting with Cap. The cost is $945,000.

The third ranking alternative, based on this criterion, is Alternative 4, Active Interior Gas Venting with Cap and Treatment. The cost is $1,648,000.

The most expensive alternative is Alternative 1, Excavation and Off-site Disposal. The cost is $6,873,000.

Support Agency Acceptance

The New Jersey Department of Environmental Protection, being the lead agency for this remedial investigation and feasibility study, concurs with the selected remedy for the Pepe Field site.

Community Acceptance

A public meeting was held on September 6, 1989 in Boonton, New Jersey to present the findings of the remedial investigation, to describe the alternatives evaluated in the feasibility study, including the preferred alternative identified in the Proposed Plan, and to receive questions and comments from the community. Attendance at the meeting was very good and there were many comments. Since the meeting, written comments have been received from several parties. The comments from the public, and responses to those comments, are presented in detail in the Responsiveness Summary. The following three areas seemed of most concern to the community:

1. The overwhelming choice of the local residents was Alternative 1, Excavation and Off-site Disposal. They expressed the opinion that any other alternative would be a "band-aid" approach which would leave the community to deal with risks which might develop in the future.

2. Residents who live in the immediate area of Pepe Field stated that the sulfide odors are their most important problem. Whether or not the hydrogen sulfide concentrations reach health effect levels as defined in the risk assessment, the odors in their homes and yards are often high enough to cause nausea, headaches and loss of sleep. Their position is that if Superfund does not address the odor problem, it is providing no benefit to the community.

3. The preferred alternative, identified in the Proposed Plan, was described in the feasibility study report as including 29 vent stacks with a height of ten feet. The opinion was expressed that this would detract greatly from the appearance of the neighborhood.

SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the risk assessment for the site, the detailed analysis of the alternatives, and public comments, both the State and EPA have determined that Gas Collection and Treatment is the most appropriate remedy for the Pepe Field site in Boonton, New Jersey. The actual degree of, or necessity for, treatment will be determined during remedial design. In addition, the existing leachate collection and treatment system will be upgraded. It is expected that upgrading this system will reduce odors. These actions will be designed and implemented to allow, to the maximum extent possible, unrestricted use of the baseball field and other recreational areas.

The remedial investigation and risk assessment did not find any current health risk at Pepe Field. The remedial objective for the site is compliance with an identified relevant and appropriate requirement, the New Jersey Solid Waste Regulations for landfill closure (N.J.A.C. 7:26-2A.9). The major components of the selected remedy include the following:

- installation and maintenance of a landfill gas collection and treatment system
- upgrading and maintenance of the leachate collection and treatment system
- maintenance of the site cover
- ground water quality monitoring
- deed restrictions to prevent waste disruption

The major construction associated with this remedy is the installation of the collection and treatment system for the landfill gases. The affect of this remedial approach will be not only compliance with the ARAR, but protection against potential future risks identified in the Summary of Site Risks.

The construction costs for the selected remedy are shown in Table 2. The total of $390,700 includes $42,000 for Engineering and Administration, and $70,000 for contingency. The operation and maintenance costs are shown in Table 3. The total annual cost for operation and maintenance is $108,000 for the first two years and $93,000 for the next 28 years. The present worth of the operation and maintenance costs, using a ten percent discount rate, is $903,000. The total present worth of the project, therefore, is $1,293,700.

STATUTORY DETERMINATIONS

Superfund remedy selection is based on the requirements of CERCLA, the provisions of the Superfund Amendments and Reauthorization Act of 1986 and, to the extent practicable, the regulations contained in the National Contingency Plan. The primary requirement is that EPA and State support agencies undertake remedial actions that achieve adequate protection of human health and the environment. In addition, section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for a site must comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws unless a statutory waiver is justified. The selected remedy must also be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy for Pepe Field meets these statutory requirements.

Protection of Human Health and the Environment

The selected remedy is protective of human health by preventing migration of landfill gases, by preventing contact with buried wastes, and by upgrading and maintaining a leachate collection and treatment system. It is further protective of the environment through the monitoring of ground water quality.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

The selected remedy will comply with all ARARs. There are no location-specific ARARs identified for Pepe Field.

Chemical-specific ARARs exist for ground water, surface soil and leachate. Ground water quality at the site already meets the standards of the New Jersey Safe Drinking Water Act. Surface soils at the site already meet the NJDEP Action Levels for surface soils or are within local background levels. Leachate quality will comply with NJPDES requirements for discharge to either a Publicly Owned Treatment Works (POTW) or to the Rockaway River. This decision will be made during the design phase.

There are several action-specific ARARs. First, the ARAR which covers the requirements for Solid Waste Landfill Closure. Removal and disposal of any waste encountered in the excavation for the gas collection system will also be consistent with those regulations. Emissions from the gas treatment system will comply with New Jersey Air Pollution Regulations. Ground water monitoring will be performed according to the requirements of the NJPDES program.

Cost-Effectiveness

The selected remedy is cost-effective because it provides overall effectiveness relative to its cost. The remedy will ensure a greater degree of protection of public health and the environment for its estimated cost than the other alternatives which were considered.

Utilization of Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable (MEP)

The State and EPA have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner at the Pepe Field site. Of those alternatives that are protective of human health and the environment and comply with ARARs, the State and EPA have determined that this selected remedy provides the best balance of tradeoffs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, and cost. While none of the alternatives used treatment of waste as a principal element, the selected remedy includes treatment of leachate and landfill gases.

Preference for Treatment as a Principal Element

This remedy utilizes permanent solutions and alternative treatment technologies, to the maximum extent practicable for this site. However, because treatment of the principal threats of the site was not found to be practicable or justified, this remedy does not satisfy the statutory preference for treatment as a principal element. The potentially hazardous substances which remain on-site have not shown evidence of mobility during the time that they have been there, therefore, treatment is considered unnecessary at this time and highly unlikely to become necessary in the future.

Documentation of Significant Changes

After consideration of public comments regarding the Proposed Plan and the feasibility study report, the State and EPA have not selected the remedy which was preferred in the Proposed Plan. Rather, Gas Collection and Treatment, which includes elements of Alternatives 2 and 4, has been selected for implementation at the Pepe Field site.

TABLE 2

SELECTED REMEDY

Construction Costs

Item	Units	Cost	Quantity	Total
Trench excavation	cu yd	$13.25	1,615	$ 22,000
Trench backfill	cu yd	2.85	1,615	5,000
Gravel	cu yd	18.40	1,615	30,000
4" PVC pipe	foot	3.00	1,520	4,500
6" PVC pipe	foot	4.00	1,820	3,200
PVC liner	sq ft	1.25	17,400	22,000
Geotextile fabric	sq ft	1.25	17,400	22,000
Dispose waste encountered during excavation	ton	140	490	69,000
Removal of "clean" excavated material	cu yd	2.70	1,380	4,000
Grading	sq yd	1.25	3,225	5,000
Piezometers	foot	50	60	3,000
Appurtenant Equipment (valves, gauges, manholes)	lump sum			15,000
Blower	ea	7,500	4	30,000
Blower housing	lump sum			10,000
Carbon columns	ea	12,000	2	24,000
Pilot testing	lump sum			10,000
	Construction Subtotal			$ 278,700
	Engineering and Administrative @ 15%			$ 42,000
	Contingency @ 25%			$ 70,000
	Construction Total			$ 390,700

TABLE 3

SELECTED REMEDY OPERATION AND MAINTENANCE COSTS

Annual Operation and Maintenance of Gas Collection and Treatment	
First 2 years:	
Monitoring--twice annual soil vapor sampling, analysis and interpretation @ $15,000 each	$ 30,000
O & M of system @ 5% construction subtotal	14,000
Carbon replacement 9,525 lbs/year @ $3.55/lb	34,000
Carbon disposal 4.25 tons/year @ $95/ton	500
Total Annual O & M	$ 78,500
28 years thereafter:	
Monitoring--once annual soil vapor sampling, analysis and interpretation @ $15,000 each	$ 15,000
O & M of system @ 5% construction subtotal	14,000
Carbon replacement 9,525 lbs/year @ $3.55/lb	34,000
Carbon disposal 4.25 tons/year @ $95/ton	500
Total Annual O & M	$ 63,500
Annual Operation and Maintenance of Leachate System	$ 15,000
Annual Site Cover Maintenance	$ 1,000
Annual Monitoring Cost for Ground Water and Leachate	$ 13,500
Total Annual O&M Costs First 2 years	$108,000
Next 28 years	$ 93,000
Present Worth of O&M Costs (10% discount rate)	$903,000

PEPE FIELD
Boonton, Morris County, New Jersey
Responsiveness Summary

A. Overview

The New Jersey Department of Environmental Protection's (NJDEP's) recommended alternative, which was detailed in the August 15, 1989, Proposed Plan, addressed solid waste landfill closure requirements for the landfill. The preferred alternative specified the installation of passive perimeter controls for the venting of methane gas, maintenance of the existing cover, operation and maintenance of the leachate collection and treatment system, and monitoring of ground water, leachate, and off-site soil gas.

It became clear from comments received during the public comment period that many residents and the Boonton Town Council strongly prefer the excavation and disposal of the waste at an off-site industrial waste disposal facility. The only identified potentially responsible party, Drew Chemical Corporation, has taken the position that the Pepe Field site should not have been placed on the National Priorities List (NPL) and, therefore, should not be remediated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). However, Drew has stated that, if any of the alternatives described in the feasibility study report were to be undertaken, other than the No Action Alternative, it would consider Alternative 2, Passive Perimeter Controls, the most appropriate. After consideration of all comments received on the Proposed Plan and the feasibility study report, however, the State and EPA selected Gas Collection and Treatment for the site.

B. Background on Community Involvement

Community interest in the site dates back to 1948 when the Boonton Board of Health ordered the E.F. Drew Corporation to cover the site. Actually the dump remained open although inactive until the mid-1960s. At that time the site was covered with a layer of fill material.

Over the years, the site has been the source of many complaints, primarily because it produces an unpleasant odor associated with hydrogen sulfide. The odor varies in intensity, sometimes forcing residents to keep their windows closed. There have been complaints of headaches and nausea caused by the hydrogen sulfide fumes. The odor is usually most pronounced after a rainfall. The Town of Boonton provided a leachate treatment facility for the leachate collected from the field. The leachate is collected in a manhole and treated with hydrogen peroxide in an effort to minimize odor generation. This facility performs marginally, and odor problems persist.

Of increasing concern is the nature of the leachate, which is collected in the on-site trench system and then directed off-site, previously into the Town's sanitary sewer system and presently into the Town storm sewer system. In addition to the hydrogen sulfide odor, the discharge has exhibited corrosive properties.

Another issue which has involved the community is whether the Drew Chemical Corporation will be held accountable as a responsible party. In 1985, the Town won a decision in U.S. District Court that upheld the Town's right to sue Drew. The Town decided at that point to wait until completion of the Superfund remedial investigation/feasibility study before proceeding further.

C. Summary of Comments Received During Public Comment Period

Comments raised during the Pepe Field public comment period on the draft feasibility study report and Proposed Plan are summarized briefly below. The comment period was held from August 15, 1989 to September 22, 1989. In addition, written comments were received from the Town of Boonton, the Drew Chemical Corporation and several local residents. The comments are categorized by relevant topics.

Evaluation of Remedial Alternatives

Comment: NJDEP was asked for clarification of its reasoning for preferring Alternative 2.

Response: CERCLA, as amended, established a procedure for selecting the appropriate remedy at a Superfund site. There are nine criteria to be considered. The first two, Overall Protection of Human Health and the Environment, and Compliance with Applicable or Relevant and Appropriate Requirements (Federal or State environmental laws), are threshold criteria which every alternative must meet to qualify for further consideration. For Pepe Field, all of the alternatives evaluated in the feasibility study meet the requirement for Overall Protection. All of the alternatives except one comply with Applicable or Relevant and Appropriate Requirements (ARARs); the No Action Alternative does not meet the relevant and appropriate requirements of the New Jersey Regulations for Solid Waste Landfill Closure (N.J.A.C. 7:26-2A.9). Based on information available, and relative to the five balancing criteria, Alternative 2 appeared to offer the best balance of tradeoffs.

The last two criteria, support agency (in this case EPA) acceptance and community acceptance, are referred to as modifying criteria. Comments from the community or the support agency may also bring out new facts which lead to modifying the preferred alternative or choosing a different alternative. If warranted, the decision process described above would be repeated using the new information. This process has led to the selection of a remedy different from that identified in the Proposed Plan.

Comment: There was concern that an alternative would be chosen which would address the methane gas problem, but not the odor from hydrogen sulfide.

Response: Applicable and relevant requirements in this case pertain to solid waste landfill closure. To meet these requirements, the agency must install a landfill gas venting system, and maintain the leachate collection system and the site cover.

An integral part of the selected remedy is the upgrading and maintenance of the leachate collection system. It is believed that, through proper operation and maintenance, this upgraded system will significantly reduce odors associated with the presence of hydrogen sulfide. Additionally, treatment of the landfill gases is included in the remedy.

Comment: The feeling was expressed that Alternative 2 is only a "band-aid" approach and that Superfund was intended to remove the problem.

Response: As described above, Alternative 2 was recommended using the criteria and methodology prescribed under Superfund.

Comment: Preference for Alternative 1 was repeatedly stated together with the opinion that the choice was based only on difference in cost, which could be recovered from the responsible party.

Response: First, as described above, cost is only one criterion used in selecting a remedy. Second, NJDEP and EPA must make remedial decisions which are consistent with the facts about a site, without regard to the source of the funds.

Comment: It was noted that the waste would be taken to an industrial waste facility if Alternative 1 were selected. It was stated that disposal at such a site, away from a densely populated residential neighborhood, would be preferable.

Response: NJDEP indicated that the waste would probably be sent to an approved industrial waste disposal facility if adequate capacity were available. It might be necessary to send a portion of it to a hazardous waste disposal facility.

Comment: It was suggested that the top five feet of good soil could be removed and saved for re-covering the landfill after excavation.

Response: Every effort will be made to use as much of the existing clean fill as possible during remedial action.

Comment: A question was asked about what success NJDEP has had in the past with methane gas collection and monitoring. Inquiry was also made regarding guarantees that NJDEP would come back and assume responsibility if something goes wrong in the monitoring process.

Response: Methane gas collection and monitoring systems represent standard technology. Regarding maintenance, specific responsibilities will be embodied in either an Administrative Consent Order or a Memorandum of Agreement between NJDEP and the Town of Boonton.

Comment: NJDEP was asked about what happened to the pesticide (Alpha-BHC) that was responsible for placing the site on the NPL.

Response: No definitive conclusion may be drawn from the apparent presence of alpha-BHC. The presence of alpha-BHC in early sampling results may have been an anomaly. In subsequent samples, alpha-BHC was not detected. If the Department were to find evidence of the presence of additional hazardous substances and/or their presence in migration pathways, the NJDEP would take appropriate measures to address the situation.

Comment: Questions were asked regarding the presence of metals in the landfill. Specific questions focused on how long these metals will stay in the soil, what kind of a health threat they present, how long it will take for them to leach out of the soil and what could be done in 30 years if these metals present a problem then.

Response: Because of changes which will occur within the landfill over time, the metals that are present will have an increased tendency to leach into the ground water. It is expected that this process would occur over a period of many years, and that metals would be gradually leached into the ground water without ever approaching levels which would affect human health or the environment. However, a ground water monitoring program will be implemented as a part of the selected remedy and will allow an evaluation to be made regarding these assumptions. Further, proper maintenance of the landfill cover will also ensure that no metals contamination becomes airborne.

Comment: It was submitted that the site should not have been placed on the NPL and that the site was included due to a single occurrence of the pesticide alpha-BHC (at 23 parts per billion) in samples of the leachate taken by NJDEP in 1981. Samples collected by NJDEP in 1979 did not contain this pesticide, nor did subsequent samples collected by EPA in 1984, or as part of the RI in 1986 and 1988. NJDEP has expressed that it believes the 1981 finding was a

laboratory error. Additionally, nothing in the history of the site would indicate that this pesticide, or for that matter, any other pesticide, was ever disposed of at the site.

Response: NJDEP has not expressed the opinion that the 1981 finding was a laboratory error. NJDEP has only raised that as one possibility. There was no reason to suspect the analysis at the time the site was evaluated for inclusion on the NPL. When analyses indicate that a contaminant is indeed present at a site, it is not necessary to have historical evidence of its disposal.

Comment: The comment was made that the only identifiable problem associated with the site (i.e., odors), is related to methane and hydrogen sulfide gas. According to NJDEP, both in the RI/FS report and at the public meeting held in Boonton on September 6, 1989, no current threat to human health or the environment exists at the site. It would be virtually impossible for the hydrogen sulfide to reach concentrations which would cause adverse health effects. It is emphasized for the record that neither methane gas nor odors, especially odors which are not associated in any way with threats to human health or the environment, are addressed under CERCLA.

Response: While it is the position of NJDEP that there is no current threat to human health and the environment, it is clear in the RI/FS reports that this is due to actions taken by the Town of Boonton in the past. There are metals concentrations in the waste which could pose a health threat if they were on the surface; they are not exposed because the Town of Boonton applied a cover to the site. The leachate also contains metals at levels which could pose a problem; that this leachate is not in adjacent yards where children play is because the Town of Boonton installed a leachate collection system.

There is ample evidence that the site is a solid waste landfill, therefore, the proposed remedial action will be taken to comply with the applicable or relevant and appropriate requirements (ARARs) as required by CERCLA, as amended.

Comment: Pepe Field is located on a former marsh area. The decaying marsh deposits are a natural source of methane, and indeed, NJDEP's report mentions that the methane concentrations at the site may in part be a natural phenomenon. The marsh deposits extend beyond the boundary of the site as well. To the extent substances occur naturally, even if they are defined as "hazardous" under CERCLA, they are not subject to CERCLA remedial action.

Response: The entire area was a marsh and the marsh deposits extend beyond the site boundaries. The high concentrations of methane and hydrogen sulfide, however, are limited to those areas where the presence of waste has been established by borings and geophysical

techniques, and to a limited extent into one adjacent property. An examination of the data presented in the Phase I RI report show that the high concentrations of methane are coming from the waste. Further, the selected remedy, in accordance with the pertinent ARARs, is not aimed specifically at methane, but rather at supplying a system to control migration of landfill gases.

Comment: The proposed remedial action will vent explosive gases into the surrounding neighborhood. Who assumes liability for an explosion resulting in injury should these gases be ignited?

Response: The remedial action includes treatment of landfill gases. Although these gases are present at high concentrations in the soil, even without treatment their concentration in air is always very low, and, therefore, they cannot ignite or explode.

Comment: The proposed remediation plan does not include funds for treatment of effluent. What has been done to check if treatment would be required? What will such treatment cost and who will pay for it should it be required? How does this alter the economics of the proposed remedial action plan?

Response: The costs of treating the leachate were not included in the feasibility study, but were included in Proposed Plan. They are part of the added costs referred to on page 5 of the Plan. This is why the operation and maintenance costs presented in the two documents are different.

Comment: Were the maintenance and monitoring costs escalated over time to reflect increased costs and then discounted to present value? How would this affect the economics of the proposed remedial action plan?

Response: These costs were not escalated before discounting. If this were done, the cost of Alternative 2 would be slightly more than $1 million and the ratio between Alternative 1 and Alternative 2 would drop from 10 to 6.5. However, if even a minor portion of the waste were classified as hazardous for disposal, that ratio would go up.

Comment: The Town of Boonton is also involved in the pursuit of cleanup of a piece of property on Division Street, known as the "PVO Site". The PVO site is under ECRA laws but the cleanup process has encountered myriad delays since the 1960s. The appropriate treatment of the Pepe Field site, i.e., Excavation and Off-Site Disposal, will serve to place the Town of Boonton in a better position to address

the PVO property, for two reasons. First, it will set a precedent of "do it once and do it right", and second, it will minimize any possibility of a delay based on a claim that Pepe Field may recontaminate PVO.

Response: The sites have no known connection. One site should not set a precedent for a dissimilar site.

Comment: The "six-month period of construction" mentioned for Alternative 1 is not consistent with the statement on page 6 of the Proposed Plan that the excavation would be expected to require approximately 18 weeks.

Response: The construction period includes not only excavation but also 1 week for mobilization, 2 weeks to install and start the wellpoint system for site dewatering, 2 weeks for final grading and drainage, 1 week for demobilization and 2 weeks for contingency.

Comment: In response to the Town's request for excavation and removal, NJDEP stated that such a remedy would simply transfer the waste problem to another site and, therefore, should be disfavored. This rationale misstates the premise of Superfund Amendments and Reauthorization Act (SARA). SARA provides "the off-site transport and disposal of hazardous substances or contaminated materials without such treatment should be the least favored alternative remedial action where practical treatment technologies are available". The language of SARA does not prohibit off-site disposal, it only requires that the waste be treated in connection with such disposal.

Response: NJDEP was not referring to any prohibitions of off-site disposal under SARA when it was stated that excavation and disposal would simply transfer the problem to another site. Most of the waste at Pepe Field would not be classified as hazardous for disposal and would not require treatment. Rather, a reference was being made to the fact that what is a permanent solution for one community is a new problem for another. The language of SARA encourages a more comprehensive approach to environmental problems.

Comment: The Town of Boonton is concerned that the present cover at Pepe Field is not thick enough to provide protection against contact with the waste buried there. Steve Austin, from the Boonton Health Department, and Bill Hoehlein of Killam Associates visited the site on September 21, 1989 to examine the surficial soil layer in the vicinity of the baseball field. By visual observation and surficial probing, it was apparent that the surficial cover is less than six

inches thick in numerous areas at or near the baseball field. In several areas, waste material was observed at or near the surface. Waste material was evidenced by its black color.

Response: The findings reported in this comment differ from those of the RI/FS. The identification of waste on the basis of a black color is suspect since some of the cover fill itself is black. In any case, if it were established that the cover fill were too thin in some places, this could be readily corrected by adding more fill.

Comment: The landfill closure requirements used as an ARAR require a clay cap with an overlying drainage layer and a topsoil layer.

Response: The regulations do not require a clay cap. They require an appropriate cover. The clay cap is required to prevent water infiltration where contamination of ground water by leachable materials would be expected. In the case of Pepe Field, the results of ground water monitoring have established that a clay cap is not necessary.

Comment: The presentation of Alternative 2 did not adequately address the issue of ground water control. Without proper ground water control, increased odors and local drainage problems could result.

Response: No ground water controls are required. Nothing is planned for the site that will affect ground water flow. There will be no increase in odors as a result of ground water flow nor will there be any change in local drainage problems as a result of the proposed remedial action. If there is a change in odors due to leachate flows, the Department would address that problem.

Comment: Given that at least some of the methane originates from natural sources outside of the site boundaries, most notably near certain residences located near the site boundaries, it is dubious whether even Alternative 1 (excavation and disposal) would solve this problem.

Response: NJDEP is not aware of any significant amount of methane originating from natural sources outside the boundaries of Pepe Field.

Comment: In installing the vent system that is part of Alternative 2, isn't NJDEP simply changing a water and soil pollution problem into an air pollution problem?

Response: The selected remedy will include the collection and treatment of landfill gases.

Comment: The suggestion was made that it would be more cost effective to take care of everything now than to have to do it 25 years down the road, and have it cost three times as much.

Response: The Department doesn't believe that it will be necessary to undertake additional remedial measures in the future.

Comment: The question was asked where Pepe Field stands as far as severity compared to other sites on the Superfund list which have been given the Alternative 2 option. Another inquiry was made as to whether Alternative 1 had been turned down at other sites.

Response: All Superfund sites present unique characteristics and, therefore, cannot always be compared on an individual basis. There are, however, two other sites within New Jersey in which similar remedies have been chosen. In each case, an excavation alternative was rejected as inappropriate.

Comment: Other questions concerned who would make the final decision with regard to choosing an alternative; when remedial action would be complete; and if the site would then be removed from the Superfund list.

Response: The Acting Regional Administrator of the EPA's Region II Office will make the final decision. Design of the selected remedy may take about one year to complete. Following that, actual implementation of the selected remedy would occur, pending the availability of funding.

Related Concerns about Current Landfill Conditions

Comment: NJDEP was questioned about the depth of the waste and the depth of the water table.

Response: The lowest level of waste is 12 to 15 feet below the ground surface; the surface of the shallow ground water aquifer is approximately 18 feet below the ground surface. The two are separated by a relatively impermeable layer of silt. There is perched water within the waste material itself.

Comment: The NJDEP was asked to describe the likelihood for increased generation of methane gas by the site in the future.

Response: Considering the age of the site, the period of maximum methane gas production, resulting from biodegradation, has most likely past. The peak rate is usually reached seven to ten years after waste is placed in a landfill.

Comment: NJDEP was asked if the rate of hydrogen sulfide generation by the landfill could increase.

Response: It is possible that hydrogen sulfide generation could increase, but, as explained above with regard to methane gas generation, an increase is not expected.

Comment: NJDEP was asked to describe what action was planned to address chemicals remaining in the landfill.

Response: Chemicals at the site do not pose a current threat. Long-term monitoring is planned, and if the situation changes, NJDEP will take appropriate measures.

Comment: Will the leachate be treated to remove metals?

Response: The discharge of treated leachate will be permitted in accordance with the requirements of the New Jersey Pollutant Discharge Elimination System (NJPDES) program. Permit discharge requirements are currently being investigated. Treatment for metals is not anticipated, however, due to the low concentrations.

Comment: NJDEP was also asked to explain the cause of pipe corrosion experienced by local residences.

Response: The agency is aware of only one instance of pipe corrosion, which occurred when leachate from the site was being discharged into the municipal sewer system, and is no longer the case.

Comment: The comment was made that Pepe Field was like Love Canal.

Response: The Pepe Field site is not similar to the Love Canal situation.

Health Problems

Comment: A statement was made that the odor problems have increased with time. A comment was made suggesting that the NJDEP sample for hydrogen inside residences.

Response: It might be possible to monitor the residences, if the NJDEP is notified immediately when odor problems occur.

Note: Since the September 6, 1989 public meeting, NJDEP has been awaiting notification of an odor problem so that sampling could be conducted. Although several rain events have occurred, no complaints have been received. The NJDEP inquired about odor problems after one rainstorm, but no positive responses were received.

Comment: It was asked if hydrogen sulfide is toxic.

Response: Hydrogen Sulfide is toxic at the level of 100 parts per million. At Pepe Field it was found at trace levels of parts per billion. That is 100,000 times less than the toxic level. The odor problem is intermittent, depending on whether or not the leachate collection system is operating, whether or not there is sufficient hydrogen peroxide, and the quantity of leachate being received.

Comment: One resident said that she and her family had experienced headaches and nausea because hydrogen sulfide odors.

Response: NJDEP will inform the New Jersey Department of Health and request their opinion.

Comment: The question was asked if health risks were considered in evaluating the implementation of the proposed alternatives.

Response: Yes, several of the remedy selection criteria include this issue.

Design of Methane Venting System

Comment: NJDEP was asked if combustible levels of methane gas would be vented from the vent stacks.

Response: The purpose of venting was to prevent accumulation of methane which would not discharge explosive concentrations of methane.

Comment: Will odors be associated with the vented gases?

Response: Odors are not anticipated, however, treatment of gases is included in the selected remedy.

Comment: Why must the proposed vent stacks be ten feet tall? What will the vent stacks be constructed of?

Response: The height of the stacks was estimated to be ten feet to prevent people from putting objects in them. They may be made from plastic or steel, and will be carefully maintained.

Comment: Other questions were asked about what the field would look like with vent stacks, and how long they would be kept in place.

Response: Although this is not the selected remedy, there would be great flexibility afforded in design of a passive venting system. For example, the poles of a scoreboard could actually be gas vents. The collection pipes could be connected in a trench under ground. Specific details would be developed during the design phase, however, the field would not be covered with stacks.

Comment: Another question asked if other methane venting systems had been installed in a similar residential area.

Response: This is conventional landfill technology, and many similar systems have been put in place. The New Jersey Superfund program has not completed construction of a similar system at a Superfund site however, one is currently under construction.

Payment of Remedial Action Costs

Comment: NJDEP was asked who would pay for the cleanup.

Response: As at most Superfund sites, the parties potentially responsible for causing the problems will be provided the opportunity to implement the remedy. If the potentially responsible parties decline, pending the availability of funding, EPA and NJDEP would implement the remedy and seek to recover costs.

Comment: NJDEP was asked if the State would pay the costs, regardless of which alternative is chosen, if Drew would not pay.

Response: Pending the availability of funding, EPA and NJDEP would implement the remedy.

Comment: NJDEP should ask Ashland Oil to pay for Alternative 1.

Response: EPA and NJDEP are not seeking to implement Alternative 1.

Comment: Would Drew Chemical be absolved of all future liability if the company paid for implementation of the selected alternative?

Response: No, they would not be absolved of future liability.

Comment: Several questions were asked about maintenance costs and requirements including how the costs are calculated, what tasks are included, who would supply the manpower, and whether the cost of maintenance would be the responsibility of the municipal government.

Response: Operation and maintenance costs are calculated for a 30 year period. In this case the actual annual cost is expected to be $93,000 after the first two years. Operation and maintenance costs for the first two years will be about $108,000 because more sampling will be done. The present worth represented by this is $903,000. This cost includes treatment of landfill gases, treatment of the leachate, monitoring, and maintenance of the complete system. The estimate includes labor costs. The maintenance cost would be the responsibility of the local government because they own the property.

Future Land Use

Comment: NJDEP was asked for clarification of the provision for deed restrictions.

Response: Basically, the goal of the deed restrictions is to maintain the integrity of the cover material for the landfill. There are some hazardous substances in the waste material at a depth of five to ten feet. If that material were on the surface, it could present a problem. Restrictions are required to prevent people from digging it up.

Comment: The question was asked about what could be done with the field in the future and whether it would be safe for young children to play there, with the proposed stacks.

Response: The field can be re-opened at any time. There is no known hazard associated with the surface soil on site. Extra care would have to be taken if the Town decided to change the field by installing a grandstand or a new refreshment stand. As indicated earlier, the field will not be covered with stacks.

Comment: NJDEP was asked how long it would take to get approval for future construction on the site by the Town.

Response: That would depend on what action was proposed. The NJDEP would thoroughly review any requests by the Town prior to permitting construction to proceed.

Comment: NJDEP was asked to clarify the preliminary design for the trench that would be built to vent methane gas. Of particular concern was its potential impact on the Town's plan to install a new sewer line along Wootton Street.

Response: The barrier created by construction of the trench would not interfere with sewer line installation.

Loss of Property Value

Comment: Concern was voiced that if Alternative 2 were selected, property values would be lowered because of the presence of stacks nearby as well as the fact that Alternative 2 is viewed as only a containment action, rather than a removal of the wastes. NJDEP was asked how this would affect the resale value of nearby properties, and whether the State or Federal government would assume financial responsibility for loss of property value.

Response: Alternative 2 has not been selected, however, there is a State agency called the Environmental Claims Administration which may be able to provide assistance. Information is available by writing David C. Mack, Administrator, Environmental Claims Administration, CN-402, Trenton, NJ 08625, or by calling 609-633-2947.

Public Participation Process

Comment: By a show of hands as well as repeated comments, it was evident that most residents of Boonton preferred Alternative 1. NJDEP was asked what these people could do to have that choice.

Response: If the residents of Boonton feel an error in judgment has been made, they can challenge the government in court.

Comment: The question was asked if the only recourse was to take the government to court. The comment was made that the Town could have settled this in court with Drew Chemical eight years ago.

Response: The Town may pursue any legal action against Drew Chemical that it believes is appropriate.

Comment: A request was made for an extension of the public comment period.

Response: The close of the comment period was extended from September 13, 1989, to September 22, 1989.

ATTACHMENT
COMMUNITY RELATIONS ACTIVITIES
FOR THE PEPE FIELD SITE

Community Relations activities conducted for the Pepe Field Landfill to date have included:

* NJDEP made phone calls to local, County and State officials announcing finalization of the Cooperative Agreement (October 10, 1984).

* NJDEP prepared a community relations plan (November 1984).

* NJDEP held a public meeting at the Boonton Town Hall to discuss initiation of the remedial investigation and feasibility study (RI/FS) and to respond to citizens' comments and questions. Approximately 100 people attended, including residents and elected officials (April 16, 1986).

* NJDEP met with local officials to discuss the Phase I RI report and plans for the Phase II sampling effort (July 31, 1987).

* NJDEP held a briefing for local officials to discuss the status of the RI/FS (July 17, 1989).

* NJDEP held a public meeting at the Boonton High School to discuss the results of the RI/FS and the remedial alternatives and to respond to citizens' comments (September 6, 1989). Approximately 175 people attended, including citizens and elected officials. A transcript of the meeting is available at the Boonton-Holmes Public Library.

* NJDEP allowed an extension of the public comment period. The comment period lasted from August 15, 1989 to September 22, 1989.